

# इंटरनेट

# मानक

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IS 3216 (1989): Engineers' drawing instruments, needles  
[PGD 22: Educational Instruments and Equipment]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*

**ENGINEERS' DRAWING INSTRUMENTS,  
NEEDLES — SPECIFICATION**

*( First Revision )*

भारतीय मानक

इंजीनियरी ड्राइंग उपकरण, सुइयां — विशिष्ट

( पहला पुनरीक्षण )

UDC 744·342·5 : 686·886

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**BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002**

## FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 11 October 1989, after the draft finalized by Optical and Mathematical Instruments Sectional Committee had been approved by the Light Mechanical Engineering Division Council.

Needles of various types are used with different drawing instruments. Their shapes and dimensions are correlated to their function as well as to the fastening screws. In this standard four different types of needles have been covered and for any particular drawing instrument a suitable shape and size may be chosen.

This standard was originally published in 1965. This revision incorporates a number of changes as a result of further experience gained in manufacture of drawing instruments and other development in this field.

The main modifications are:

- a) Inclusion of tolerance on length of tapered ground portion;
- b) Omission of 'Type D' needles; and
- c) Inclusion of tolerance on  $h_1$ .

In preparing this standard due consideration has been given to manufacturing practices being followed in the country and assistance has been derived from DIN 58515-1977 Nadeln für reisszeuge (Needles for drawing instruments) issued by the Deutsches Institut für Normung (DIN), Germany.

# Indian Standard

## ENGINEERS' DRAWING INSTRUMENTS, NEEDLES—SPECIFICATION

### ( First Revision )

#### 1 SCOPE

**1.1** This standard covers the requirements of needles of various types suitable for use with compasses, dividers, spring bow compasses, rotating compasses, needle points and prickers for engineers' drawing instruments.

#### 2 REFERENCES

IS No.	Title
IS 1068 : 1985	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium on iron and steel (second revision)
IS 2500 (Part 1) : 1973	Sampling inspection tables, Part 1 Inspection by attributes and by count of defects (first revision)
IS 6528 : 1972	Stainless steel wire
IS 7904 : 1975	Carbon steel wire rods

#### 3 TYPES

**3.1** The needles shall be of four types as follows: Type A, Type B, Type C and Type E

#### 4 MATERIAL AND HARDNESS

**4.1** The material for manufacture of needles shall preferably be as per Grade E of IS : 7904 1975.

**4.1.1** A suitable grade of stainless steel (SS) shall preferably be as per IS 6528 : 1972.

**4.2** The needles shall have hardness within 630 to 690 HV.

#### 5 DIMENSIONS

**5.1** The dimensions for needles of different types shall be as shown in Table 1.

**5.2** The figure is intended only to illustrate the dimensions, and design detail is left to the discretion of manufacturer so long as the specified dimensions are maintained.

#### 6 DESIGNATION

**6.1** Needles shall be designated by the commonly type, used name, nominal diameter  $d$ , length  $l_1$ , number of this standard and material.

*Example :*

Needle of Type B having a nominal diameter  $d = 1.5$  mm, length  $l_1 = 28$  mm made from steel (St) shall be designated as:

Needle B 1.5 × 28 IS 3216 St

#### 7 GENERAL REQUIREMENTS

**7.1** The points of the needles shall be truly centred.

#### 8 WORKMANSHIP AND FINISH

**8.1** Needles shall be hardened, tempered and ground, and shall be polished bright.

**8.2** When needles are made from carbon steel they shall be chromium plated to service Grade 2 of IS 1068 : 1985.

#### 9 TESTS

##### 9.1 Dimensional Test

Needles shall be tested for conformity with the requirements specified in 5.1.

##### 9.2 Hardness Test

Needles shall be tested for hardness specified in 4.2.

#### 10 SAMPLING

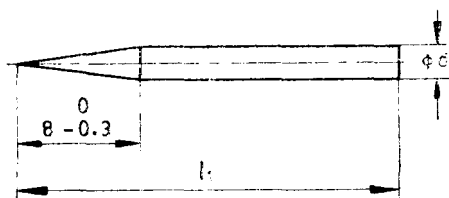
##### 10.1 Lot

In a consignment all the needles of same type and size manufactured from same material under similar conditions of production shall be grouped together to constitute a lot.

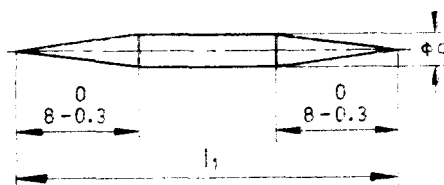
**10.2** Unless otherwise agreed to between the supplier and the purchaser, the procedure given in IS 2500 (Part 1) : 1973 shall be followed for sampling inspection. The inspection level,

**Table 1 Dimensions for Needles**  
( Clause 5.1 )

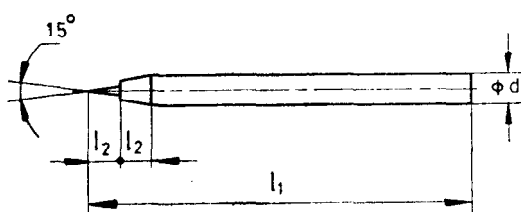
All dimensions in millimetres.



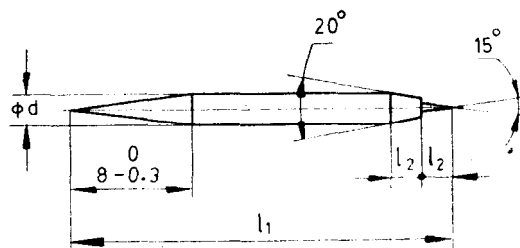
TYPE A



TYPE B



TYPE C



TYPE E

$d \text{ h}9$				$\pm 0.5$	
Type A	Type B	Type E	Type C	$l_1$	$l_2$
1				25	
	1			25	
		1		25	1
1.5				28	
	1.5			28	
		1.5		28	1.5
2				25/28	
	2			25/28	
		2		25/28	2
			2	25/28	

acceptable quality level (AQL) and type of sampling plan to be followed for various characteristics shall be as given in 10.2.1 and 10.2.2.

**10.2.1** For dimensions, designation, general requirements, and workmanship and finish a single sampling plan with inspection level IV and (AQL) of 2.5 percent as given in Tables 1 and 2 of IS 2500 (Part 1): 1973 shall be followed.

**10.2.2** For hardness a single sampling plan with inspection level II and AQL of 2.5 percent as given in Tables 1 and 2 of IS 2500 (Part 1): 1973 shall be followed.

## 11 PACKING

**11.1** Needles shall be wrapped in paper and then packed in quantities not exceeding 100 pieces in the suitable card board or plastic container. Different types and sizes of needles shall not be packed in the same container.

**11.2** Needles may also be supplied as a part of an instruments set in which case the complete set may be supplied in a suitable box.

## 12 MARKING

**12.1** The label containing each pack shall be marked with the manufacturer's name or trademark, if any, type, size and quantity of needles to ensure proper identification.

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